



## STANDARD FOR CONSTRUCTION OF ROAD IMPROVEMENTS

**County Street & Road Specification**  
**County Highway Department Standards Plans**  
**County Surveyor Standards Plans**

***Approved: 4/5/1993***

***Revised: 7/4/1998***

# STANDARDS FOR CONSTRUCTION OF ROAD IMPROVEMENTS

Hamilton County Code, Title 8, Article 17, Chapter 1.

## 8-17-1-41 Street and Road Specifications

Sec. 39. (a) General Purposes: The County is responsible for maintaining all streets, roads and structures accepted into the county highway system. It is therefore necessary to set standards for the construction of all improvements for which the County will be responsible in order to avoid assuming unnecessary maintenance costs and inconvenience to the citizens and businesses of Hamilton County.

All improvements intended for public use, to be constructed in a county right-of-way or easement, or to be constructed in a right-of-way or easement to be dedicated to the county, or to be constructed as privately maintained improvements must conform to county standards according to plan commission requirements and shall conform to or exceed the standards as set forth in this County Code Section.

The standards set forth in this County Code Section are intended to be minimum standards. Variances from these standards may be considered by the County Commissioners upon written application to the Commissioners citing unusual conditions justifying changes based upon sound engineering practices. Proposed variances shall have been reviewed by the County Engineer and the plan commission having jurisdiction before consideration by the Commissioners.

All improvements shall be constructed to conform to the current Standard Specifications of the Indiana Department of Transportation (INDOT), referred to in this Code Section as "Standard Specifications", except where deviations are hereinafter allowed or variances granted. Copies of the Standard Specifications are on file at the offices of the County Highway Department and the County Engineer.

(b) Rights-Of-Way Widths: All streets and roads shall have rights-of-way widths equal to or greater than the widths shown in Table 6-1 based on the Hamilton County Comprehensive Plan, or greater if required by an another applicable plan commission Comprehensive Plan, Thoroughfare Plan, or Regional Transportation Plan. All new roads or roads not specifically identified shall be classified as determined

by the county engineer using the definitions set out in the Hamilton County Comprehensive Plan.

(c) Construction Plans and Specification: All construction plans and specifications shall be prepared and certified in accordance with Indiana law by Professional Engineers or Land Surveyors licensed to practice in the State of Indiana. Change orders shall be initiated by the design professional who certified the plans, and subject to the written approval of the County Engineer. All road construction plans shall be 24" x 36". All plans shall include the Standards issued by the Hamilton County Surveyor and the Hamilton County Highway Department when applicable. All design shall be in accordance with these standards. When not specifically addressed by these standards the design shall be in accordance with the current AASHTO Policy on Geometric Design of Highways and Streets and other design guides acceptable to the County Engineer.

(d) Embankments: Embankments shall be constructed and compacted in accordance with Section 203 of the Standard Specifications.

(e) Subgrades and Backfill: Subgrades shall be prepared, after the installation of all underground utilities to be under the pavement, in compliance with Section 207 of the Standard Specifications except that the upper six inches shall be compacted to 95% of standard Proctor Density with proper moisture control. Clay and silty-clay soil shall be compacted at a moisture content of -1% to +2% above optimum moisture to reduce future volume changes. Construction plans shall identify soil types and their locations in the project based on the Hamilton County Soils Survey and geotechnical investigation as necessary.

Trenches in the subgrade shall be backfilled with granular material compacted in lifts in conformance with Section 715.08 of the Standard Specifications, or with controlled low strength material (CLSM) similar to flowable mortar described in Section 213 of the Standard Specifications, except that flowable mortar used in trenches of utilities will have a maximum 28 - day compressive strength of 100 psi.

Subgrades and backfilled excavations shall be inspected and tested by the County Engineer or his authorized representative and approved before pavements are

constructed. Proof rolling, if required, shall be done with a rubber-tired roller in accordance with Section 203.26 of the Standard Specifications or other method as approved by the County Engineer. Unacceptable portions of the subgrade shall be corrected by the Contractor, acceptable to the County Engineer, and reinspected and approved by the County Engineer or his representative before paving is started.

(f) Street and Road Pavements: Streets and roads shall be constructed in conformance with approved construction plans, and to equal or exceed the thicknesses and dimensions shown in Table 6-1 and 6-2, except where verified soil or drainage conditions, variations in details, or other design factors justify changes in design according to the AASHTO Guide for Design of Pavement Structures (AASHTO Guide). Thicknesses and materials will be adequate to meet the AASHTO design parameters shown in Table 6-2. Commercial driveways (located within the right of way) and auxiliary lanes shall be constructed to the equivalent thicknesses of the pavements they are added to (as set out in Table 6-2) or the entrances they are constructed to serve, whichever is greater.

Pavements built by stage construction, that is pavements used to carry traffic before the full pavement structure is in place, will have each stage used by traffic inspected by the County Engineer or his representative for distressed areas before the next stage is started. Distressed areas will be repaired to the satisfaction of the County Engineer or his representative before an additional stage is constructed.

Existing street pavements to be upgraded to County Standards as parts of improvements to be accepted by the County, will be tested and evaluated by the design professional to determine the condition, quality and amount of pavement and the condition of the subgrade. Existing pavements may be upgraded by augmenting the existing pavement structure if elevations and grades are compatible and if the resulting pavement meets the structural and geometric requirements of Table 6-1 and 6-2; or the existing pavement materials, if suitable, may be incorporated into a new pavement structure.

(g) Subsurface Drains: Subsurface drains will be installed under the gutters as shown in Hamilton County Highway Standards for all streets. Materials shall conform to Section 907 of the Standard Specifications.

(h) Flexible Pavements: Flexible pavements shall be constructed in conformance with Section 403 of the Standard Specifications except as follows.

The contractor may produce HAC pavement mixtures containing a maximum of 20 percent reclaimed asphalt pavement (RAP) in base and binder and a maximum of 10 percent in surface mixtures based on the job mix formula (JMF) RAP data. However, if the contractor elects to use more RAP than 20 percent in base and binder mixtures or 10 percent in the surface mixture, he shall perform the tests on the RAP stockpile as required in 403.04(b)6 of the INDOT Standard Specifications. The contractor shall be responsible for all aspects of process control of the mixtures in insuring that they meet all other requirements of the INDOT Standard Specifications.

(i) Concrete Pavements: Plain concrete pavements shall be constructed in accordance with Section 501 of the Standard Specifications except that the concrete may be placed, consolidated and finished with equipment appropriate to the size of the project, or by hand methods if authorized by the County Engineer. Texturing will be by brooming or by a drag acceptable to the County Engineer. Joints will be designed and located to provide effective load transfer and crack control. The jointing pattern to be employed will be reviewed and approved by the County Engineer prior to the beginning of paving.

(j) Curbs and Gutters: Concrete curbs and gutters or integral curbs conforming to Section 605.04 of the Standard Specifications will be required on all subdivision streets except as otherwise allowed in this section. Shapes and dimensions shall conform to the requirements of Table 6-1 and Hamilton County Standard sheets which are to be included in the approved construction plans. Joint locations shall conform to good engineering practice and shall be as shown on the Hamilton County Standard sheets or as approved by the County Engineer prior to the beginning of construction.

To prevent undermining by water, curbs shall be promptly and carefully backfilled after application of curing protection, which shall take place immediately after slipforming or removal of forms. Curing shall meet Section 501.17(e) of the Standard Specifications. Backfill shall be compacted as soon as practical and maintained at an elevation slightly below the curb. As the backfill settles, it shall be regraded as often as necessary to keep it slightly below the curbs.

(k) Sidewalks: Concrete sidewalks conforming to Section 604.03 of the Standard Specifications, shall be constructed when required by the local planning agency as indicated on approved plans. The covenants of the subdivision shall specifically state that either an individual property owner and/or homeowners association and/or developer shall be responsible for installing any sidewalks as shown on the subdivision construction plans approved by the county engineer and which were required by the local planning agency or were desired by the developer and are located within any new or existing county road right of way. The covenants shall also specifically state that either an individual property owner and/or the homeowners association shall be responsible for the maintenance of any sidewalks installed within any new or existing county road right of way as shown on the approved construction plans for the subdivision. If more than one entity is responsible for the installation or maintenance of the sidewalks, then the covenants shall specifically state who has which of the responsibilities and for which sections of sidewalks those responsibilities apply. All sidewalks must be installed in accordance with the approved construction plans and these specifications. No changes from the approved plans and specifications will be allowed in sidewalk location within the county road right of way or the construction specifications without the submittal of revised construction plans and the express written approval of the county engineer. The sidewalks to be installed by the developer, property owner or homeowners association may be required to be bonded or covered by a letter of credit by the local planning agency. The local planning agency will be responsible for the inspection of the sidewalks installed as a part of the new subdivision development. Sidewalks will have a minimum width of 5' in commercial areas and in residential areas where the gross density is greater than ten units per acre; and a minimum width of 4' in residential areas with a density less than ten units per acre. Wheelchair ramps will be included as required by the County Engineer and the Americans with Disabilities Act. The back edges of the walks shall be located a maximum of 1' inside the rights-of-way lines or located in a common area. Sidewalks shall be at least 4" thick, except where they are constructed across and in conjunction with residential driveways they shall be at least 6" thick, and where they are built across commercial driveways they shall be the same thicknesses as the driveways, but at least 6" thick. Sidewalks shall be placed on compacted subgrades. They shall be jointed by tooling or sawing to conform to the approved construction plans. Sidewalks shall be protected against drying and extreme temperatures immediately after texturing.

(l) Storm Drainage and Culverts: Within subdivision streets' rights-of-way,

surface water, sump pump discharge, and geothermal heat pump water discharge shall be carried away by enclosed storm drainage systems, not including subsurface drains. Except that when adequately sized and installed to meet the requirements of the Hamilton County Surveyor in regulated drain systems and the Hamilton County Engineer in unregulated drain systems, subsurface drains may be used for sump pump discharge, geothermal heat pump discharge, foundation drains and perimeter drains for septic systems. Downspouts shall not be discharged into any part of the enclosed storm drainage system. Storm drainage pipes or systems, subsurface drains or sump pump outlets shall not discharge into roadside ditches or over curbs. All pipes, culverts, inlets, cleanouts and manholes shall be constructed in accordance with plans and specifications approved by all governmental agencies having jurisdiction over the project drainage. Systems shall be designed to prevent overtopping of curbs by a storm not exceeding the ten-year design storm.

Culverts and storm sewers shall be designed for a ten year design storm, and installed to the approved elevations shown on approved construction plans. Culverts for local roads shall be designed such that the road shall not be overtopped by a 25 year storm event. Other road classifications shall be designed to prevent overtopping by a 100 year storm event. Storm sewers shall be reinforced concrete pipe conforming to A.S.T.M. C-76. Minimum diameter for storm sewers will be 12". Minimum diameter for culverts shall be 12" under driveways and 18" under roadways. End sections made of the same material as the pipe shall be used for culverts less than 27" diameter. Culverts shall be reinforced concrete pipe conforming to A.S.T.M. C-76 unless otherwise approved by the County Engineer.

Roadside ditches may be used in lieu of curbs for road drainage on roads classified as local as long as the following conditions are met:

1. Curbs are not required by the plan commission having jurisdiction over the project.
2. No lot shall be smaller than 2 acres in size for all lots in the same subdivision.
3. Sporadic use of curbs for lots smaller than 2 acres or where minimum flow line grade can not be obtained will not be allowed.
4. Minimum flowline grade of ditches shall be 1%. Maximum flowline grade of ditches shall be 7%. Ditches at greater than 3% grade shall be sodded.
5. Maximum depth of roadside ditches shall be 3'-6" from top of pavement.
6. Front and back slope of ditch shall not be a steeper than a 4:1 slope.
7. The ditches shall not be filled in by the property owner with or

without installing storm sewers at any time in the future. The covenants shall specifically prohibit this.

8. Underdrains shall be installed as directed by the County Engineer for unregulated drains and the County Surveyor for regulated drains.
9. The plans for subdivisions utilizing roadside ditches shall include cross sections at 100 foot intervals and at outlet points. Profiles of all streets showing centerline and left and right ditch flowlines shall also be submitted.
10. Variances to the above items #1 through #9 may be granted by the County Engineer.

(m) Bridges and Large Culverts: Plans, specifications and design calculations for bridges or culverts having clear or combined spans greater than 20' shall be reviewed separately from those of other improvements. Bridges and large culverts will be designed to meet current AASHTO criteria for HS-20-44 loadings (including a 35 psf future wearing surface). The County Engineer must be provided with copies of current letters of approval for waterway openings and structure elevations from all other agencies having jurisdiction over stream crossings, including but not limited to the Hamilton County Surveyor and the Indiana Department of Natural Resources. All structures shall be designed to accommodate a 100 year flood with freeboard as determined by the County Engineer.

Bridges and large culverts shall be designed and constructed with materials, features and finishes approved by the County Engineer, prior to the beginning of construction, in order to minimize the County's maintenance requirements and liability exposure. Aesthetic features commensurate with the proposed development are encouraged.

(n) Signs: Highway Department Standard Sheets. Street name signs shall be furnished at the developer's expense and installed by the Developer prior to the release of the performance bond or prior to the issuance of the first occupancy permit, whichever occurs first. The signs shall be installed on one post at each street intersection at an appropriate spot in each northeast corner wherever possible. Decorative type signs may be installed by the developer provided the covenants of the property specify that the residents will maintain the signs through their home owners association. The Hamilton County Highway Department will give written notification to the Homeowners Association when maintenance of the decorative signs is required. If not completed within the 30 days, the Hamilton County Highway Department will replace the signs with standard signs. Decorative



posts shall not be greater than a 4" x 4" wood post or a 2" diameter steel tube unless modified to meet breakaway standards and other safety characteristics as approved by the County Engineer.

Stop signs, yield signs, speed limit signs and other necessary warning signs shall be furnished at the developer's expense and installed by the County in conformity with the Indiana Uniform Traffic Control Manual. Decorative signs will not be allowed for use as regulatory or warning signs. Sign requirements will be coordinated with the County Engineer prior to completion of the construction plans. A separate sheet(s) showing only traffic controls shall be included in the construction drawings. This sheet may be submitted for initial review as soon as the primary plat is approved. One additional copy of this sheet shall be submitted to the Hamilton County Highway Department for transmittal to the Hamilton County Sheriff's Department for their review. The County Engineer will be responsible for drafting necessary ordinance amendments or official actions required to authorize the control signs' installations. The developer shall furnish the signs prior to the release of the performance bond or prior to the issuance of the first occupancy permit, whichever occurs first.

Signs and posts shall be standard sizes and colors on reflective surfaces in accordance with Sections 910.14 and 807.13b of the Standard Specifications and the Hamilton County Highway Department Standard Sheets.

(o) Monuments: Monuments shall be installed by the developer and certified by a Professional Land Surveyor in conformance with applicable ordinances and statutes. Monuments and recoverable bench marks shall be indicated and described on the construction plans.

(p) Inspection: Prior to beginning construction of any roads or bridges which are to be dedicated to Hamilton County, the plans and specifications for the roads and/or bridges shall be approved by the Hamilton County Engineer. Three copies of the plans shall be submitted and the Hamilton County Engineer shall either approve or reject, specifying the reasons for rejection. Initial review of the plans will be completed within 30 days. When the plans are approved, the Hamilton County Engineer shall stamp them as approved. One copy shall be returned to the developer, one copy shall be provided to the inspector and one copy shall be retained by the Hamilton County Engineer. Any amendments to the plans shall also be submitted to the Engineer in triplicate and must be approved by the Hamilton County Engineer prior to the construction of any changes.

Construction plans may be submitted for approval and construction prior to

final approval of a subdivision or plat by the Board of County Commissioners of Hamilton County. However, the approval of construction plans for roads and the execution and approval of the inspection agreement shall not be deemed, nor construed, as an approval of the plat or subdivision by the Board of Commissioners of Hamilton County, the Hamilton County Plan Commission, or any other agency having regulatory authority or jurisdiction over the property platted or divided.

Prior to starting construction of any roads and/or bridges to be dedicated to the county, the developer shall execute an agreement with Hamilton County which will provide that Hamilton County will supply an inspector to inspect the construction to insure that such construction meets the requirements of the approved plans and specifications, except that sidewalk inspection shall be the responsibility of the local planning agency and will not be a part of this agreement. The developer shall provide a copy of the agreement to the Plan Commission having planning jurisdiction over the improvements. The developer shall reimburse Hamilton County for the full cost of all inspection, laboratory, and field tests except for those costs related to sidewalks. The developer shall escrow 100% of the estimated total costs with the County Highway Department at the time the agreement is executed.

All improvements shall be constructed, inspected and certified pursuant to the executed agreement described above.

Upon completion of construction, or a portion of construction, the inspector will certify to the County Engineer whether the construction complies with Hamilton County standards, approved construction plans, and approved change orders. Where the inspector and the County Engineer agree it is necessary to confirm conformance with these standards, the pavement will be cored as part of the inspection process. The average thickness of the cores must equal or exceed the minimum required thickness, and no single core can have a deficiency greater than one-half inch. All deficient portions of pavements will be replaced at the developer's expense before the pavements are accepted.

(q) Performance Surety: At the time a plat or subdivision is submitted to the Board of Commissioners of Hamilton County for final approval, the developer shall file a performance bond, or approved letter of credit running to the Board of Hamilton County Commissioners as a condition for approval of the plat or subdivision. The performance surety shall conspicuously show the expiration date of the surety, if any, and be on a form approved by the County Engineer. The performance surety shall specify that all construction covered by the surety shall be done in accordance with this County Code Section, shall show the date of the approval of the plans for the work, and specify the date when the work shall be

completed, but not later than two (2) years from the acceptance of the surety. The performance surety shall run until terminated by the County, by action of the Board of Commissioners, or the surety shall run a minimum of one year and expire by its own terms. In the event a performance surety expires by its own terms, and the final inspection of the improvements have not occurred by sixty (60) days prior to the expiration date on the letters, the Hamilton County Engineer will make demand upon the surety. Such demand will be released in the event that an extension of the performance surety is provided to the Board of Commissioners for approval prior to the expiration of the original surety.

At the time the plat or subdivision is submitted to the Board of Commissioners of Hamilton County for approval, the Developer shall post a performance surety for twenty percent (20%) of the total cost of the improvements and eighty percent (80%) of the cost of the uncompleted portions of the improvements. The estimated costs of the improvements shall be approved by the Hamilton County Highway Engineer. The completed improvements shall be certified as being complete and in substantial compliance with standards and specifications by the inspector and approved by the Hamilton County Engineer. If the Developer elects to breakdown the improvements into individual surety components, those components shall be approved by the County Engineer. The Board of Commissioners of Hamilton County may release the eighty (80%) percent portion of the surety for individual components of the improvements, prior to final completion of all components, if;

1. The inspector certifies that the portion of the work covered by the bond or letter of credit is completed in accordance with the plans and the requirements of this County Code Section;
2. The release is recommended by the County Engineer; and
3. The twenty percent (20%) portion of the surety remains in effect.

(r) Maintenance Surety: Prior to acceptance of construction and release of a performance surety, the developer shall file a maintenance bond on county form or approved letter of credit with the County. The maintenance surety shall run to the Board of Hamilton County Commissioners and be in an amount equal to 20% of the construction costs as estimated by the County Engineer. It shall provide:

1. Surety and principal satisfactory to the Commissioners; and
2. It will provide that for a period of three years after the release of the performance surety the developer will make necessary repairs to any and all required improvements using materials and workmanship meeting the requirements of this County Code Section.

The term of three years shall be automatically extended by the surety until a satisfactory release has been effected.

Not more than six months, nor less than one month prior to the expiration date of the maintenance surety , the County Engineer shall inspect the improvements covered by the maintenance surety . If no deficiencies are found to be present, the County Engineer shall notify the Commissioners in writing that there is no objection to the release of the maintenance surety . If deficiencies are found, the County Engineer shall notify the developer of the specific deficiencies with a statement that the release shall be withheld until all deficiencies are corrected to the satisfaction of the County Engineer. If the developer does not acknowledge receipt of the notice within fifteen days, he will be sent a second notice by certified mail.

When the County Engineer is notified that all deficiencies have been corrected, another inspection will be made by the County Engineer. If there are still deficiencies, the above process will be repeated. In the event that the developer does not correct all deficiencies to the satisfaction of the County Engineer, the County will be empowered to have the deficiencies corrected at its expense and to secure reimbursement from the developer, his bonding company, or source of his letter of credit. Written notice of the County's intent to take such action shall be transmitted to the developer and his surety by hand delivery or certified mail.

(s) Concrete Specifications:

Concrete Sidewalks -

INDOT Class "A"

or

Minimum Compressive Strength: 4000 PSI at 28 days

Air Entrainment: 6.5%  $\pm$  1.5%

Maximum Slump: 4"

Structural, Bridge Decks, Piers, Etc.

As per design engineer specifications

Pavement and Approaches

INDOT Specifications Section 501

## Curbs and Gutters

INDOT Class "A"

or

Minimum Portland Cement Content: 365 lbs./Cubic Yard

Minimum Portland Cement / Fly Ash Ratio: 3.2 by weight

(Type "F" fly ash is not allowed between October 15 and April 1)

Maximum Water Cement Ratio: 0.450

Air Entrainment: 6.5%  $\pm$  1.5%

Minimum Compressive Strength: 4000 PSI at 28 days

Coarse Aggregate: INDOT Class "A"

## Test Methods and Procedures

Water/Cement Ratio ..INDOT General Instructions to Field Employees, Section 46

Air Test . . . . . AASHTO T152 or ASTM C231

Unit Weight. . . . . AASHTO T121 or ASTM C138

Making Specimens . . . AASHTO T23 or ASTM C31

Compressive Strength . ASTM C39 and ASTM C94 Sec. 17

Slump. . . . . ASTM C143

Samples shall be obtained in accordance with applicable portions of AASHTO T141 except sampling may be done at the truck or on the grade. The entire sample may be obtained from one portion of the load.

- a. Exception to AASHTO T121 or ASTM C138, Determining the Unit Weight.
  1. An aluminum measure is an acceptable alternate.
  2. A strike-off bar may be used in lieu of a cover plate.
  3. Weights shall be determined to the nearest 0.01 of a pound instead of 0.1 of a pound.
- b. Exceptions to AASHTO T152 or ASTM C231, Air Tests.
  1. Samples shall be obtained as directed.
- c. Exception of ASTM C94 Section 17.
  1. The strength shall be the average of the strengths of all cylinders tested at the age specified, with a minimum of 2 cylinders, and this average shall be equal to or greater than the required strength.
  2. If the compressive strength of one or more cylinders in one strength test is below 75% of the required strength, the entire test is considered as failed.

### Concrete Protection

All concrete shall be properly cured and protected against loss of moisture and extreme temperature by method approved by the County Engineer prior to the start of construction. Concrete shall be protected from damage by rain, or replaced if damaged.

### INDOT Standard and Specifications

Concrete material and placement shall meet all the requirements of the INDOT Standard Specifications unless otherwise specified herein or unless otherwise directed by the County Engineer.

(t) **Fees:** The cost of the required reviews made by the Hamilton County Highway Department shall be borne by the Developer. The following fee schedule shall be used to pay for the reviews.

Primary plat review: \$400 per plat.

Secondary plat review: \$400 per subdivision section.

Construction plan review : \$500 per subdivision section.

Variance review : \$100 per location.

Small (<5 Lot) Subdivision combined primary and secondary review - no new roads: \$100 per subdivision

These fees shall be paid prior to each phase of the project being reviewed.

(u) **Violations:** A person who violates any provision of this County Code Section commits an ordinance violation subject to enforcement in the manner provided by Indiana Code 36-1-6-3. Each day of a violation is considered a separate offense. Fines shall be assessed according to the following schedule after having been put on notice by posting at site or certified letter.

Correction of violation before any work proceeds on the item concerned or is covered by other work = \$0.

Failure to correct violation prior to continued work = \$1000/day.

Failure to correct violation prior to covering the work = \$1500/day.

Citations will be posted and issued to the contractor and/or property owner who may be held jointly and separately liable. No construction work on the project shall proceed until the correction to the violation has been made and the fine has been paid. Additional construction plan approvals, plat approvals and/or permits

shall not be issued to the violator until the correction to the violation has been made and the fine paid.

Performance sureties will not be released until all fines have been paid.

**TABLE 6-1**  
**MINIMUM GEOMETRIC DESIGN STANDARDS FOR ROADS AND STREETS**

CLASSIFICATION		PAVEMENT WIDTH				RIGHT-OF-WAY <sup>6</sup>
		# of Lanes <sup>1</sup>	16' Median or Center Lane	# of Parking Lanes <sup>2</sup>	Required shoulder or Curb and Gutter Treatment	
Primary Arterial	With curb:	4	1	0	24" chairback curbs	Back to back of curb + 15' each side. (120' min.)
	Without curb:	4	1	0	10' paved shoulders	120' minimum <sup>3</sup>
Secondary Arterial	With curb:	4	0 or 1	0	24" chairback curbs	Back to back of curbs + 15' each side. (90' min.)
	Without curb:	4	0	0	8' paved shoulders	90' minimum <sup>3</sup>
Collector (and Commercial)	With curb:	2	0 or 1	0, 1 or 2	24" chairback curb	Back to back of curb + 10' each side. (80' min.) <sup>4</sup>
	Without curb:	2	0	0, 1 or 2	3' #53 stone shoulder	80' minimum <sup>4</sup>
Local <sup>5</sup>	With curb:	2	0	0, 1 or 2	24" roll curb	Back to back of curbs + 10' each side. (50' min.) <sup>4</sup>
	Without curb:	2	0	0, 1 or 2	4' earth shoulder	70' minimum <sup>4</sup>

**NOTES:**

- Where required by the County Engineer, additional acceleration or deceleration or right turn lanes shall be added. All lanes shall be 12'- 0" wide.
- Parking lanes shall be 8'-0" wide.
- Actual RAW width shall be based on engineering design and shall include the width of the thru lanes, turn lanes parking lanes, shoulders, side ditch width plus 15 feet each side.
- Actual RAW width shall be based on engineering design and shall include the width of the thru lanes, turn lanes, parking lanes, shoulders, side ditch width plus 10 feet each side.
- New developments shall include RAW corner cuts at the intersection of public roads based on the highest road classification at the intersection. For local roads the corner cut shall consist of a minimum 20' radius connecting the RAW lines. Collector roads shall be a triangular area with two 30' sides. Arterials shall be a triangular area with two 35' sides.
- See section 39 (l) concerning minimum requirements allowing the use of non-curbed sections for local roads.



TABLE 6-2  
MINIMUM STANDARDS FOR ROADS AND STREETS

Item	Class of Road or Street		
	Local	Collector or Commercial	Primary & Secondary Arterial
Cul-de-sac maximum length <sup>1</sup>	600'	600'	n.a.
Cul-de-sac curb radius	38'	50'	n.a.
Maximum grade	7% <sup>2</sup>	5%	5%
Minimum grade <sup>6</sup>	0.5%	0.5%	0.5%
Design speed - mph	25	40	55
Horizontal curve radius	150'	200'	300'
Tangent between reverse curves	50'	200'	200'
Intersection angle - degrees	60	75	75
Intersection offset	150'	200'	200'
Curb return radius	20'	30'	35'
Sight distance	250'	650'	900'
AASHTO design values:			
Reliability	70-80	80-90	90-95
Standard overall deviation			
Concrete	.35	.35	.35
Flexible	.45	.45	.45
PSI loss due to traffic			
Concrete	2.2	1.7-2.2	1.7
Flexible	2.2	1.7-2.2	1.7
Minimum pavement thicknesses on prepared subgrades:			
		(Min.)	(Min.)
H.A. Surface	1"	Designed (1")	Designed (1")
H.A. Binder	3"	Designed (4") <sup>3</sup>	Designed (5") <sup>4</sup>
Stone Base	9" <sup>5</sup>	Designed (12")	Designed (14")
or			
H.A. Surface	1"	Designed (1")	Designed (1")
H.A. Binder	2"	Designed (3")	Designed (2")
H.A. Base	7"	Designed (8") <sup>3</sup>	Designed (10") <sup>4</sup>
or			
Plain Concrete <sup>7</sup>	6"	Designed (8") <sup>3</sup>	Designed (10") <sup>4</sup>

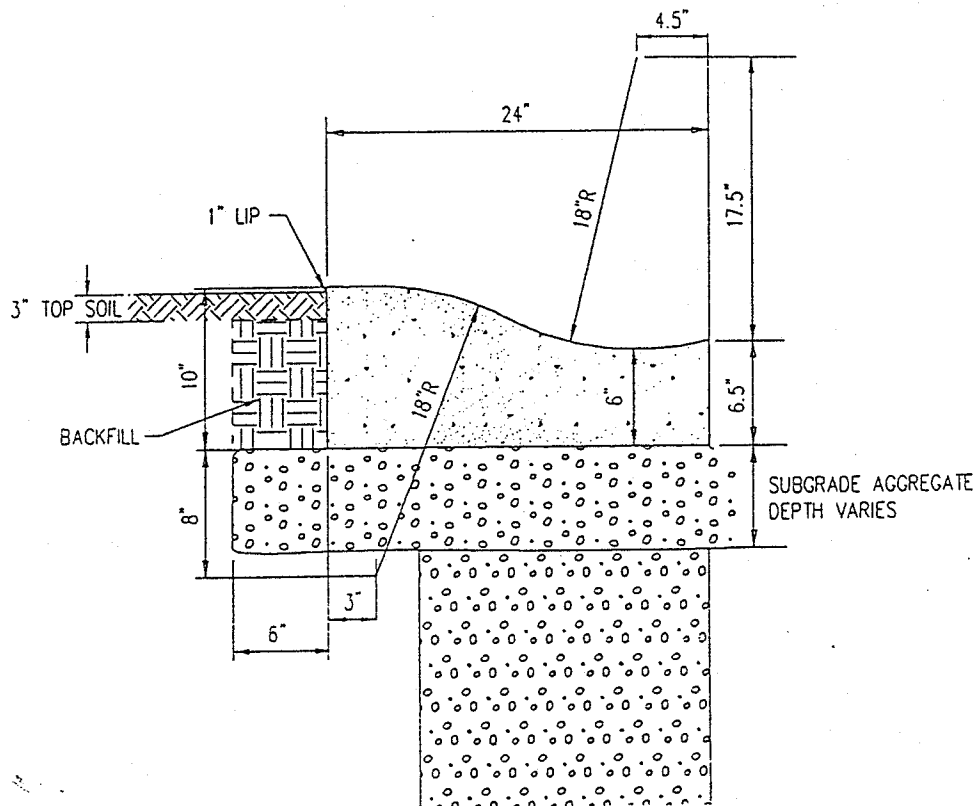
TABLE 6-2 CONTINUED  
MINIMUM STANDARDS FOR ROADS AND STREETS

Notes:

1. Cul-de-sac length measured from center of through-street to center of cul-de-sac.
2. Subject to AASHTO Standards relating to intersection proximity.
3. Add 1" HAC binder or base or concrete for truck traffic > 10% of ADT.
4. Add 2" HAC binder or base or concrete for truck traffic > 10% of ADT.
5. Shall consist of 9" of #53 stone or a combination of 5" of #2 stone and 4" of #53 stone.
6. This minimum grade requirement shall apply to the curblines of cul-de-sacs and other special pavement considerations.
7. Concrete pavements utilizing a subbase material having an AASHTO Soil Classification of A-2-6, A-2-7, A-4, A-5, A-6, A-7-5 OR A-7-6 shall have a base course of 4" of #8 stone.

# HAMILTON COUNTY HIGHWAY DEPARTMENT STANDARD PLANS

C-1	CONCRETE ROLL CURB & GUTTER	4-5-93
C-2	ROLL CURB DETAIL WITH REVERSED SLOPE GUTTER	4-5-93
C-3	VALLEY GUTTER DETAIL	4-5-93
C-4	COMBINED CONCRETE CURB & GUTTER (TYPE II)	4-5-93
C-5	COMBINED CURB & GUTTER W/ REVERSED SLOPE GUTTER (TYPE II)	4-5-93
CS-1	CROSS-SECTION FOR COLLECTOR STREET W/ CURB	2-22-91
P-1	PIPE UNDERDRAIN	4-5-93
S-1	SUBDIVISION REGULATORY SIGNS	4-5-93
S-2	SUBDIVISION REGULATORY SIGNS	4-5-93
S-3	SUBDIVISION SIGN PLACEMENT	4-5-93
U-1	ROAD CUT PATCHING DETAIL	1-14-92
U-2	UTILITY LOCATIONS ON A LOCAL ROAD	4-5-93
U-3	UTILITY LOCATIONS ON A COLLECTOR ROAD	4-5-93
U-4	UTILITY LOCAL ROAD CROSSING DETAIL	4-5-93



# NOTES:

Expansion joints are required at Storm Inlets.

Contraction joints should be installed at 10' spacings.

Spacing shall be 5' on curve radii.

Contraction joints shall be tooled or sawn in continuously poured curbs to a depth of 1/2" min.

## CONCRETE ROLL CURB & GUTTER NO SCALE

HAMILTON COUNTY HIGHWAY DEPARTMENT

H-2

RECOMENDED:

*Tom R. Stevens*  
HAMILTON COUNTY ENGINEER

4-5-93  
DATE

APPROVED:

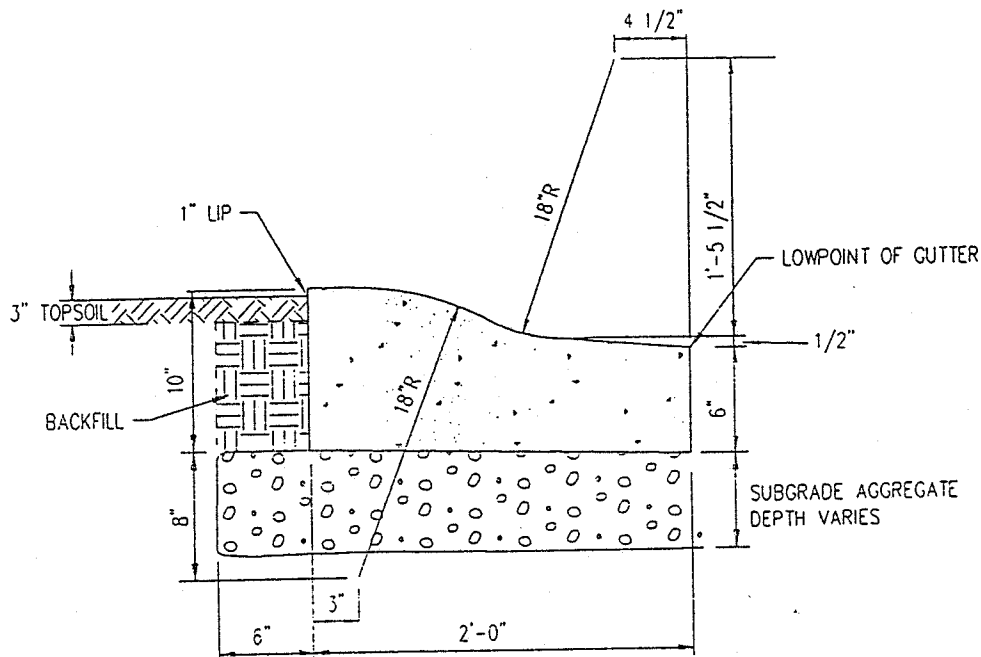
*Tom R. Stevens*  
HAMILTON COUNTY DIRECTOR

4-5-93  
DATE

REVISED: \_\_\_\_\_

STANDARD PLAN

C-1



#### NOTES:

Expansion joints are required at Storm Inlets.

Contraction joints should be installed at 10' spacings.

Spacing shall be 5' on curve radii.

Contraction joints shall be tooled or sawn in continuously poured curbs to a depth of 1/2" min.

### TYPICAL ROLL CURB DETAIL WITH REVERSED SLOPE GUTTER

NO SCALE

## HAMILTON COUNTY HIGHWAY DEPARTMENT

H-6

RECOMENDED:

*Tom Lake*  
HAMILTON COUNTY ENGINEER

4-5-93  
DATE

APPROVED:

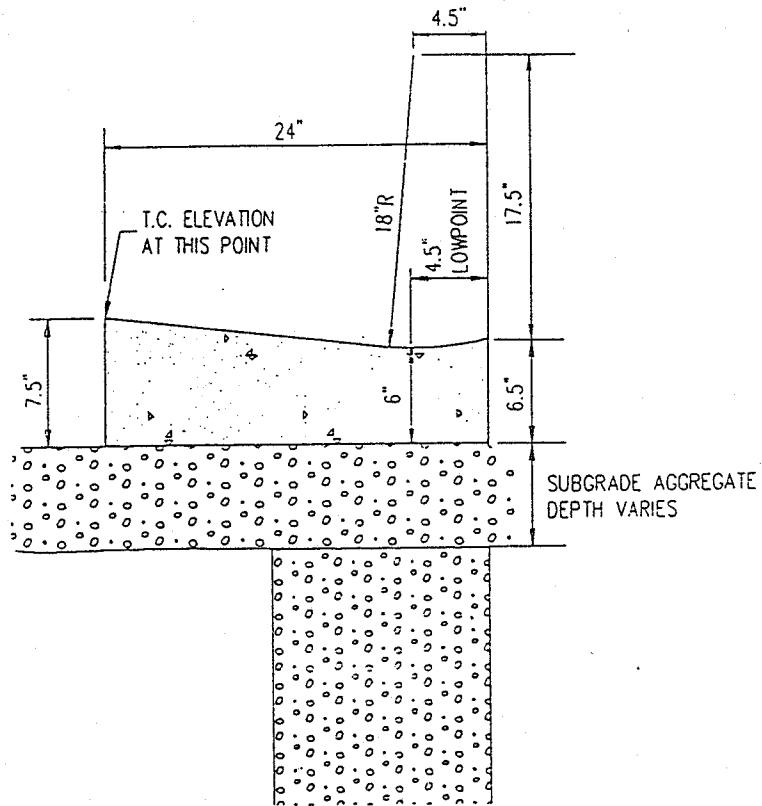
*Tom R. Stevens*  
HAMILTON COUNTY DIRECTOR

4-5-93  
DATE

REVISED: \_\_\_\_\_

STANDARD PLAN

C-2



#### NOTES:

Expansion joints are required at Storm Inlets.

Contraction joints should be installed at 10' spacings.

Spacing shall be 5' on curve radii.

Contraction joints shall be tooled or sawn in continuously poured curbs to a depth of 1/2" min.

### VALLEY GUTTER DETAIL

NO SCALE

## HAMILTON COUNTY HIGHWAY DEPARTMENT

H-1

RECOMENDED:

*Tom Zuber*  
HAMILTON COUNTY ENGINEER

4-5-93  
DATE

APPROVED:

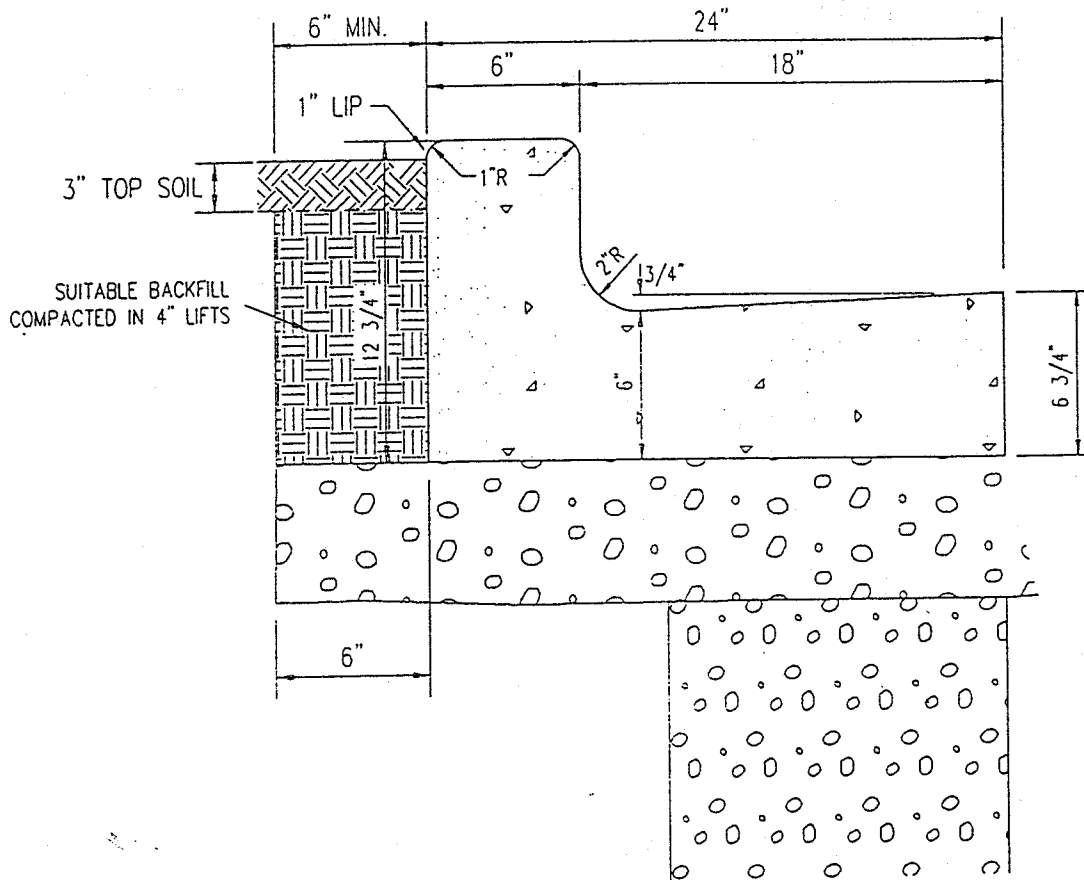
*Chris R. Stevens*  
HAMILTON COUNTY DIRECTOR

4-5-93  
DATE

REVISED: \_\_\_\_\_

STANDARD PLAN

C-3



#### NOTES:

Expansion joints are required at Storm Inlets.

Contraction joints should be installed at 10' spacings.

Spacing shall be 5' on curve radii.

Contraction joints shall be tooled or sawn in continuously poured curbs to a depth of 1/2" min.

## COMBINED CONCRETE CURB & GUTTER (TYPE II)

NO SCALE

### HAMILTON COUNTY HIGHWAY DEPARTMENT

RECOMENDED:

*Lee Fisher*  
HAMILTON COUNTY ENGINEER

4-5-93  
DATE

APPROVED:

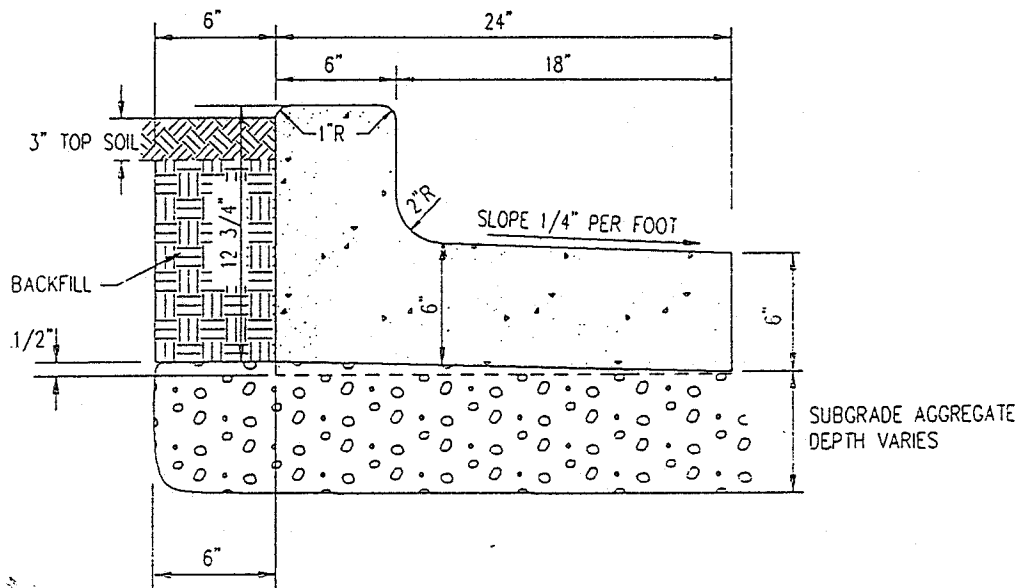
*Chris R. Stevens*  
HAMILTON COUNTY DIRECTOR

4-5-93  
DATE

REVISED: \_\_\_\_\_

STANDARD PLAN

C-4



#### NOTES:

Expansion joints are required at Storm Inlets.

Contraction joints should be installed at 10' spacings.

Spacing shall be 5' on curve radii.

Contraction joints shall be tooled or sawn in continuously poured curbs to a depth of 1/2" min.

### TYPICAL COMBINED CURB & GUTTER WITH REVERSED SLOPE GUTTER

NO SCALE

## HAMILTON COUNTY HIGHWAY DEPARTMENT

H-5

RECOMENDED:

*Tom R. Stevens*  
HAMILTON COUNTY ENGINEER

4-5-93  
DATE

APPROVED:

*Tom R. Stevens*  
HAMILTON COUNTY DIRECTOR

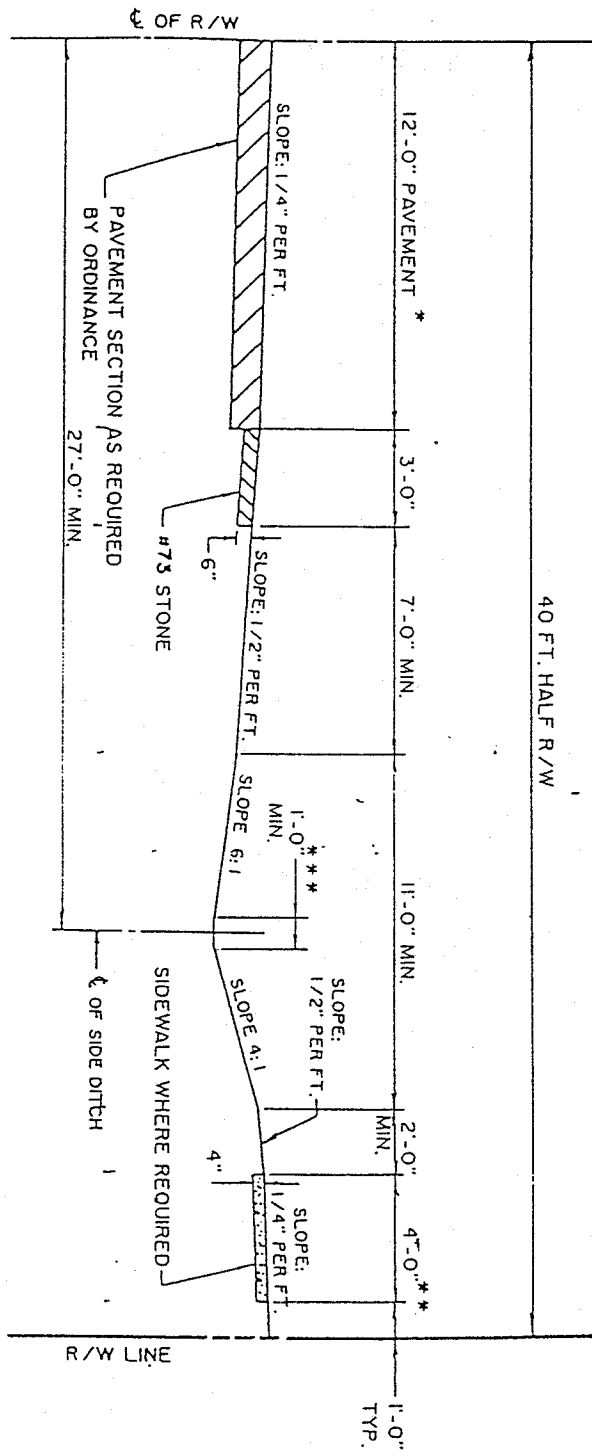
4-5-88  
DATE

REVISED: \_\_\_\_\_

STANDARD PLAN

C-5





# HAMILTON COUNTY HIGHWAY STANDARD CROSS-SECTION COLLECTOR STREET w/o CURB

SCALE: 1" = 6'-0"

- \* VARIATION FROM THIS SHALL BE APPROVED IN WRITING BY COUNTY ENGINEER.
- \*\* 5'-0" WHERE REQUIRED BY ORDINANCE.
- \*\*\* ACTUAL WIDTH TO BE BASED ON HYDRAULIC REQUIREMENT OF SPECIFIC SITE.

## HAMILTON COUNTY HIGHWAY DEPARTMENT

REVISED \_\_\_\_\_

RECOMMENDED [Signature]  
HAMILTON COUNTY ENGINEER

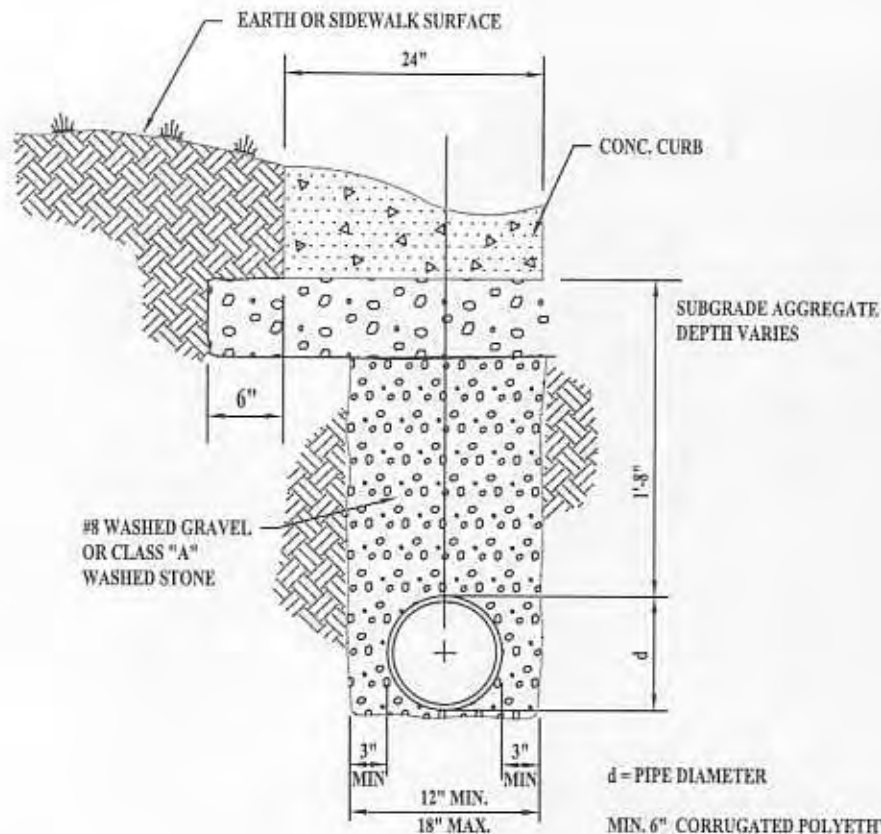
2-22-91  
DATE

APPROVED [Signature]  
HAMILTON COUNTY DIRECTOR

2-22-91  
DATE

STANDARD PLAN

CS-1



MIN. 6" CORRUGATED POLYETHYLENE PIPE,  
TYPE SP, conforming to section 907.19 of the Indiana  
Department of Transportation Standard Specifications - 2006

#### NOTES:

Installation of underdrain shall conform to section 718 of the Indiana Department Of Transportation Standard Specifications.

Underdrains shall not be installed until final grading and compaction is completed on subgrade.

Any contamination of underdrain backfill shall be removed prior to installation of aggregate base.

Underdrains shall not be installed until utilities located beneath the underdrains are in place.  
(i.e. watermains, storm sewers, sanitary sewers, ect.)

### PIPE UNDERDRAIN

NO SCALE

## HAMILTON COUNTY HIGHWAY DEPARTMENT

REVISED: 08-22-2005

RECOMENDED:

HAMILTON COUNTY ENGINEER: JAMES W. NEAL

8-22-05  
DATE

APPROVED:

HAMILTON COUNTY DIRECTOR: BRADLEY J. DAVIS

8/22/05  
DATE

STANDARD PLAN

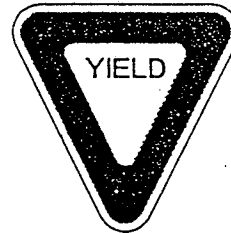
**P-1**

STOP Sign (R1-1)



R1-1  
30" x 30"

YIELD Sign (R1-2)



R1-2  
30" x 30" x 30"

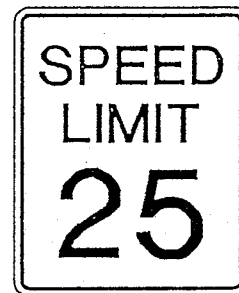
SPEED LIMIT Signs (R2-1)



R1-4  
18" x 6"



R1-3  
12" x 6"



R2-1  
24" x 30"

NOTES:

- 1.) Signs shall be single faced with Engineering Grade reflectorized sheeting on 0.080" thick aluminum sheet material per INDOT Standard Specifications 912.10.
- 2.) Posts shall be 11'-0" long, 3 lb/ft green painted or galvanized channel sign post per INDOT Standard Specification 909.14.
- 3.) All sign sizes, shapes, colors and material shall meet the Indiana Manual on Uniform Traffic Control Devices.

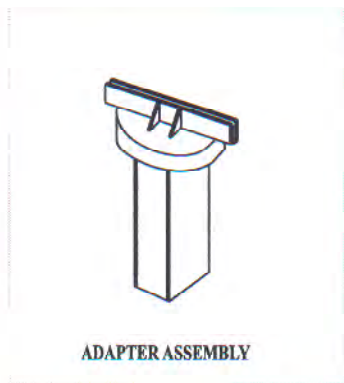
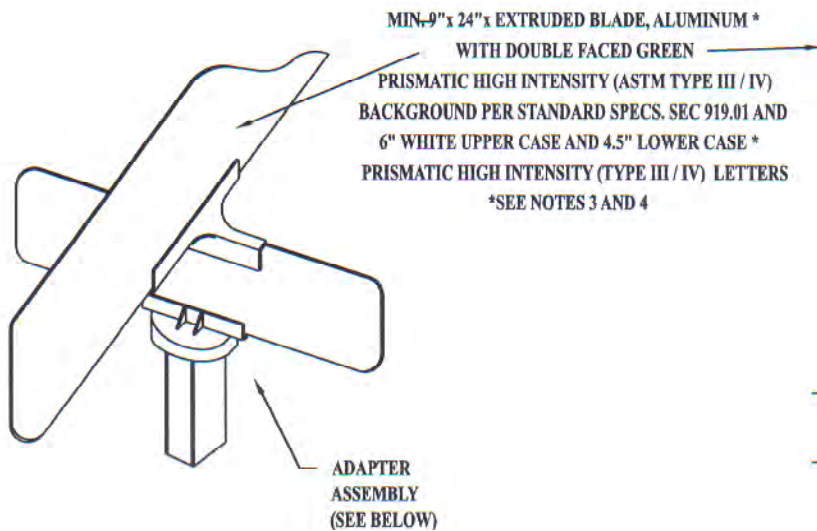
TYPICAL SUBDIVISION REGULATORY SIGNS

NO SCALE

HAMILTON COUNTY HIGHWAY DEPARTMENT

H-12

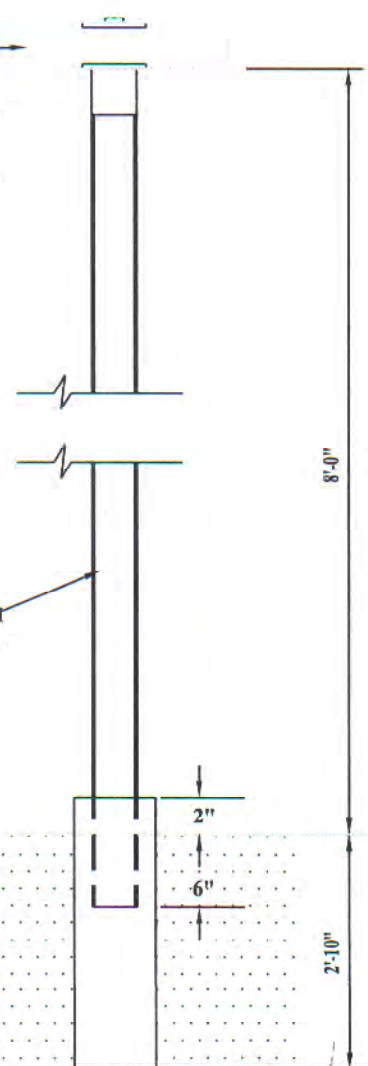
		REVISED: _____
RECOMENDED: <u><i>[Signature]</i></u>	<u>4-5-93</u>	STANDARD PLAN <b>S-1</b>
HAMILTON COUNTY ENGINEER	DATE	
APPROVED: <u><i>[Signature]</i></u>	<u>4-6-93</u>	
HAMILTON COUNTY DIRECTOR	DATE	



TYPE I SQUARE POST 2 1/4" x 2 1/4" 12 GAUGE WITH  
42" LONG 2 1/2" x 2 1/2" 12 GAUGE ANCHOR BASED  
SEC. 910.14

GRADE

40" OF ANCHOR BASE  
DRIVEN INTO THE  
COMPACTED BACKFILL



- 1.) Private Streets shall be so indicated on the left hand side of the sign with dual line  
2 1/2" black letters on yellow reflectorized background preceding the street name.
- 2.) One sign assembly shall be located at each intersection on the northeast corner when possible.
- 3.) On Signs at intersections with a multi-lane (More than 2) road and a speed limit greater than 40 MPH  
8" upper case letters and 6" lower case letters shall be used. The sign shall be a min 12" x 24" x 0.125 aluminum
- 4.) On Signs at intersections where the speed limit on both streets is less than or equal to 25 MPH  
4" upper case letters and 3" lower case letters can be used. The sign shall be a min of 6" x 24" extruded blade, aluminum.
- 5.) The letters shall be a combination of upper and lower case letters.

## SUBDIVISION STREET NAME SIGNS

NO SCALE

## HAMILTON COUNTY HIGHWAY DEPARTMENT

RECOMENDED:

HAMILTON COUNTY ENGINEER: JAMES W. NEAL

6/22/10  
DATE

APPROVED:

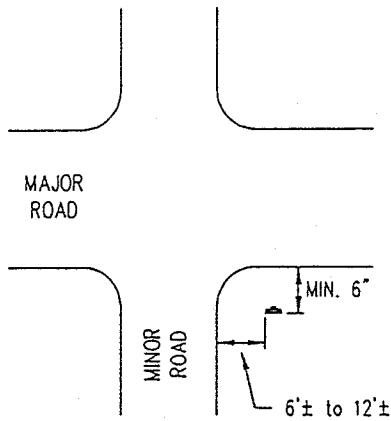
HAMILTON COUNTY DIRECTOR: BRADLEY J. DAVIS

6/28/10  
DATE

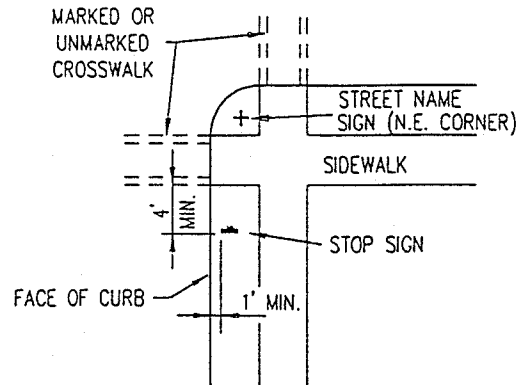
REVISED: 06-14-2010

STANDARD PLAN

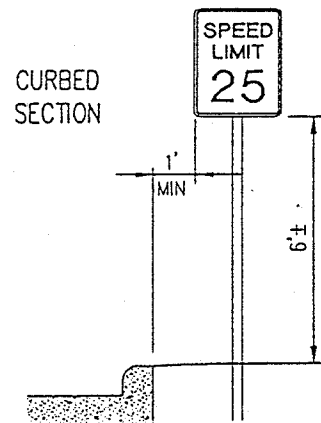
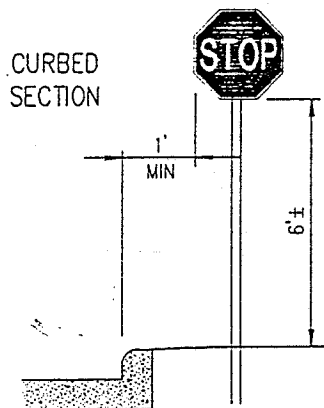
**S-2**



MINOR CROSSROAD



URBAN INTERSECTION



NOTE:

Additional information may be found in the Indiana Manual on Uniform Traffic Control Devices.

## SUBDIVISION SIGN PLACEMENT

NO SCALE

## HAMILTON COUNTY HIGHWAY DEPARTMENT

RECOMENDED:

*Tom Locke*  
HAMILTON COUNTY ENGINEER

4-5-93  
DATE

APPROVED:

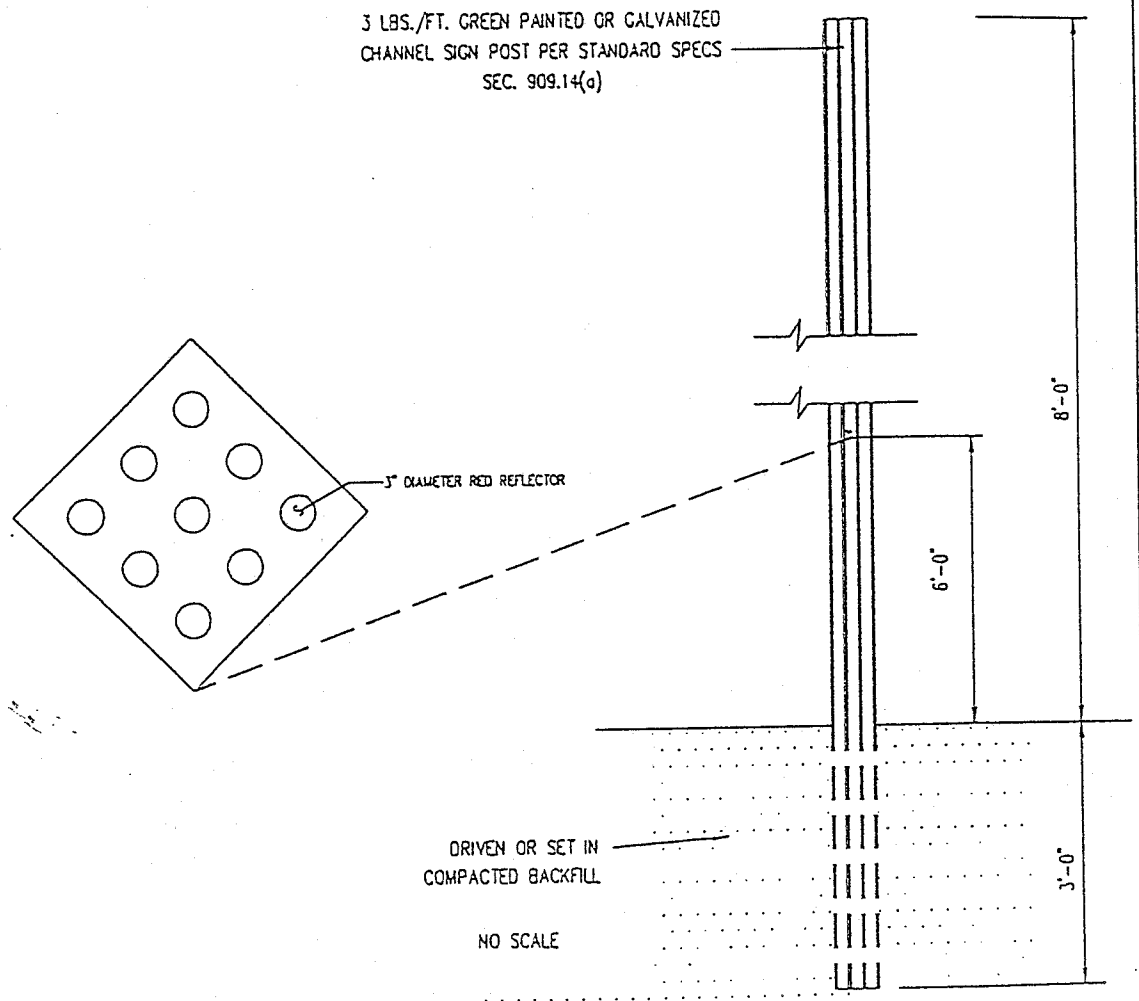
*Tom R. Stevens*  
HAMILTON COUNTY DIRECTOR

4-5-93  
DATE

REVISED: \_\_\_\_\_

STANDARD PLAN

S-3



NOTES:

1. Nine (9) red deflectors are to be mounted symmetrically on an 18-inch diamond red panel.
2. Three (3) End-of-Road markers are to be placed at each location. Markers are to be set evenly across the width of the road.

END OF ROAD MARKERS

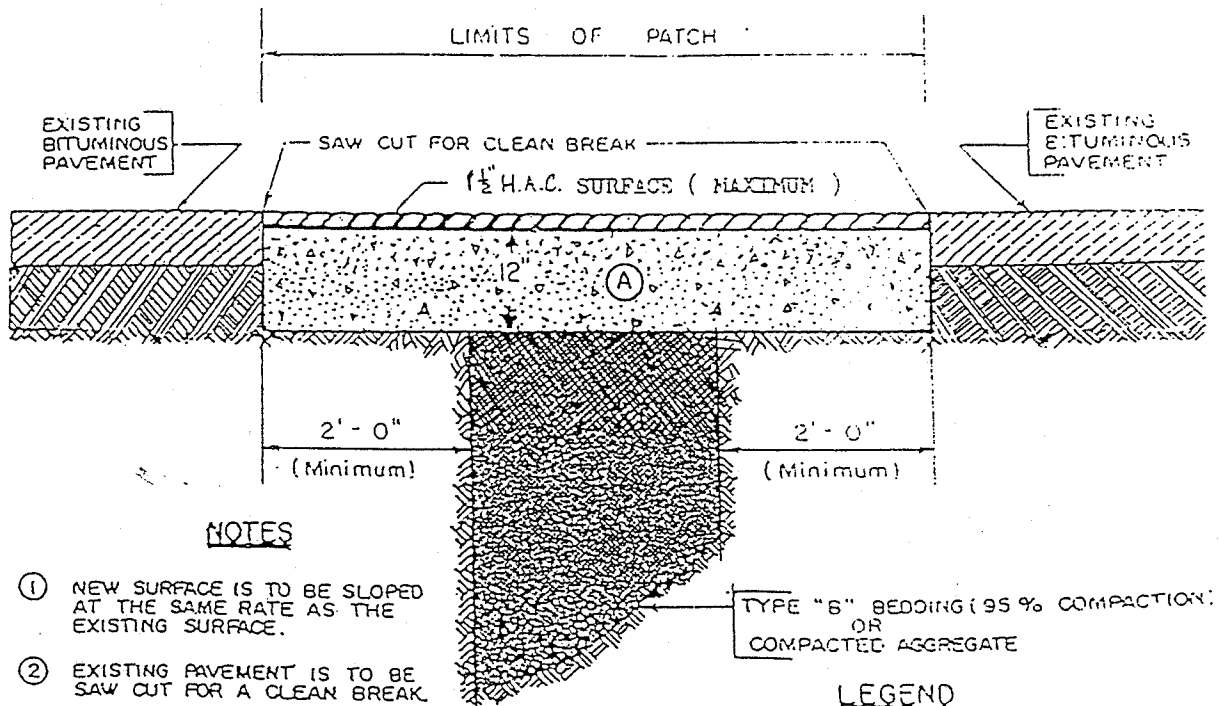
HAMILTON COUNTY HIGHWAY DEPARTMENT

K/MARKER

		REVISED: 03-09-95
RECOMENDED: <u><i>Tom Locke</i></u>	<u>3/10/95</u>	STANDARD PLAN
HAMILTON COUNTY ENGINEER	DATE	
APPROVED: <u><i>Tom K. Stumma</i></u>	<u>3-17-95</u>	S - 4
HAMILTON COUNTY DIRECTOR	DATE	

# DETAIL FOR CUT ROAD PATCHING

ON ALL CUTS, ROADS THAT REQUIRE THE EXISTING PAVEMENT TO BE REMOVED. THE DETAIL AS SHOWN BELOW SHALL BECOME A PART OF THIS PERMIT.



## NOTES

- ① NEW SURFACE IS TO BE SLOPED AT THE SAME RATE AS THE EXISTING SURFACE.
- ② EXISTING PAVEMENT IS TO BE SAW CUT FOR A CLEAN BREAK.
- ③ COMPACTED AGGREGATE IS TO BE LAID AT 6" LIFTS AND IS TO BE COMPACTED TO A MINIMUM OF 95%.
- ④ TRENCH SPOIL IS TO BE REMOVED FROM THE WORK SITE.
- ⑤ 1 1/2" H.A.C. #11 SURFACE.
- ⑥ BITUMINOUS TACK APPLIED AS PER INDIANA DEPT. OF HIGHWAYS STANDARD SPECIFICATIONS-1988 SECTION 409 & 902.

## LEGEND

- ① PLAIN CONCRETE IS TO BE FINISHED 1/2" BELOW THE EXISTING PAVEMENT.

## HAMILTON COUNTY HIGHWAY DEPARTMENT

RECOMENDED:

*Tom Zuber*  
HAMILTON COUNTY ENGINEER

6-17-91  
DATE

APPROVED:

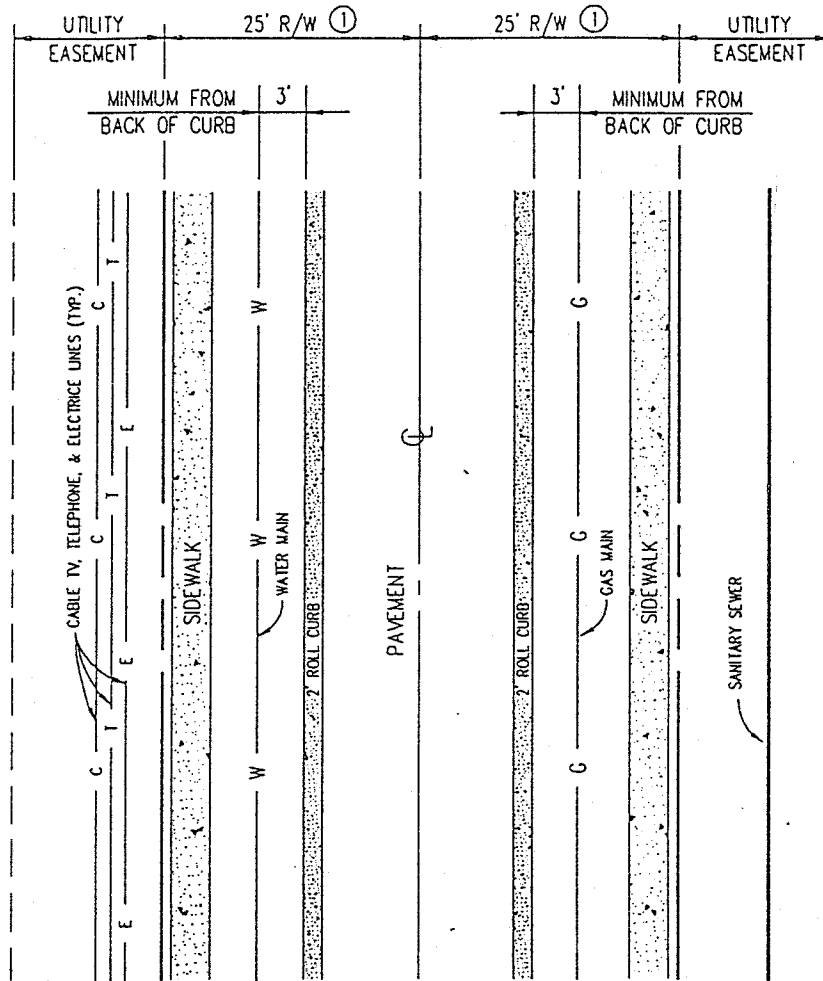
*Tom R. Sturges*  
HAMILTON COUNTY DIRECTOR

6-28-91  
DATE

REVISED: 1-14-92

STANDARD PLAN

U-1



NOTES:

- 1.) R/W shall be increased when road width (b-b curbs) exceeds 30'-0".
- 2.) Only gas & water utilities are allowed to be located in R/W.  
All others shall be located in the utility easements, except to cross road.
- 3.) Deviations will require a variance during the permit process.

TYPICAL UTILITY LOCATIONS ON A LOCAL ROAD  
NO SCALE

HAMILTON COUNTY HIGHWAY DEPARTMENT

RECOMENDED:

*[Signature]*  
HAMILTON COUNTY ENGINEER

4-5-93  
DATE

APPROVED:

*[Signature]*  
HAMILTON COUNTY DIRECTOR

4-5-93  
DATE

REVISED: \_\_\_\_\_

STANDARD PLAN

U-2





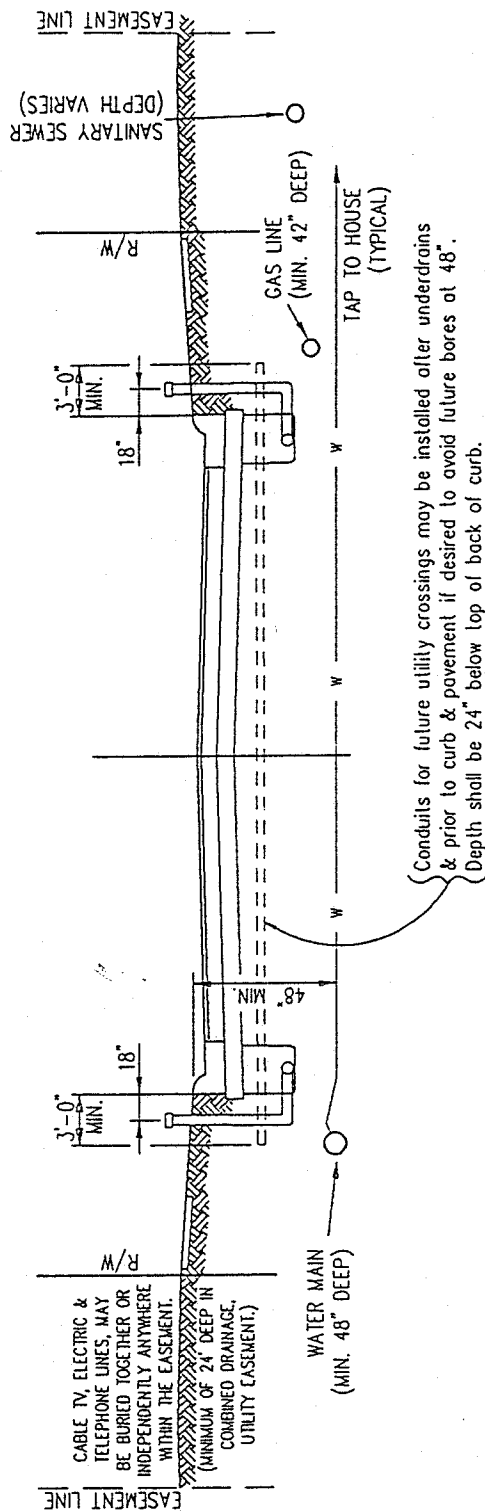
- 1.) R/W shall be increased where necessary for additional road width.
- 2.) Minimum depth of all utilities shall be 24" below final grade.
- 3.) Sidewalks shall not be installed unless there is an adjacent utility easement.
- 4.) Underground electrical, cable T.V. & telephone may be buried in the same trench. (min. 24" deep). Overhead electrical, cable T.V. & telephone shall have poles set within 2'-0" of the edge of R/W if no easement exists.
- 5.) Deviations will require a variance during the permit process.

## HAMILTON COUNTY HIGHWAY DEPARTMENT

U-3

APPROVED: Tom K. Stearns  
HAMILTON COUNTY DIRECTOR

4-5-93  
DATE



## NOTES:

- 1.) All taps, laterals, pushes, bores and other underground road crossings for all utilities shall be at a minimum of 48" below the pavement surface to avoid deflections which will damage the underdrain system.
- 2.) All utilities to be installed under the road or curb shall be installed prior to the underdrains if a trenching operation is to be used. Subsequent to the underdrains being installed, NO trenching or plowing will be allowed across the road or curb subbase for utility installations within the r/w. In no event shall cutting of the asphalt binder, surface or concrete be allowed. No undercutting of in place curbs will be allowed.
- 3.) Any repairs to the underdrain system shall be inspected by the Surveyor's Office when a regulated drain is involved, otherwise by the Hamilton County Highway Department.
- 4.) Water tap & gas tap pits shall be granular backfilled to within 10" to the top of curb.
- 5.) This typical detail applies only to roads having the R/W and easement characteristics as shown on this plan.
- 6.) All depths measured from top of back of curb.
- 7.) Deviations will require a variance from the County Engineer.

## TYPICAL UTILITY LOCATIONS AND LOCAL ROAD CROSSING DETAIL

NO SCALE

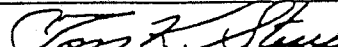
## HAMILTON COUNTY HIGHWAY DEPARTMENT

RECOMMENDED:

  
 HAMILTON COUNTY ENGINEER

 4-5-93  
 DATE

APPROVED:

  
 HAMILTON COUNTY DIRECTOR

 4-5-93  
 DATE

REVISED: \_\_\_\_\_

STANDARD PLAN

U-4

# HAMILTON COUNTY SURVEYOR STANDARD PLANS

SSD LATERAL TO INDIVIDUAL LOTS ALONG STREETS

4-5-93

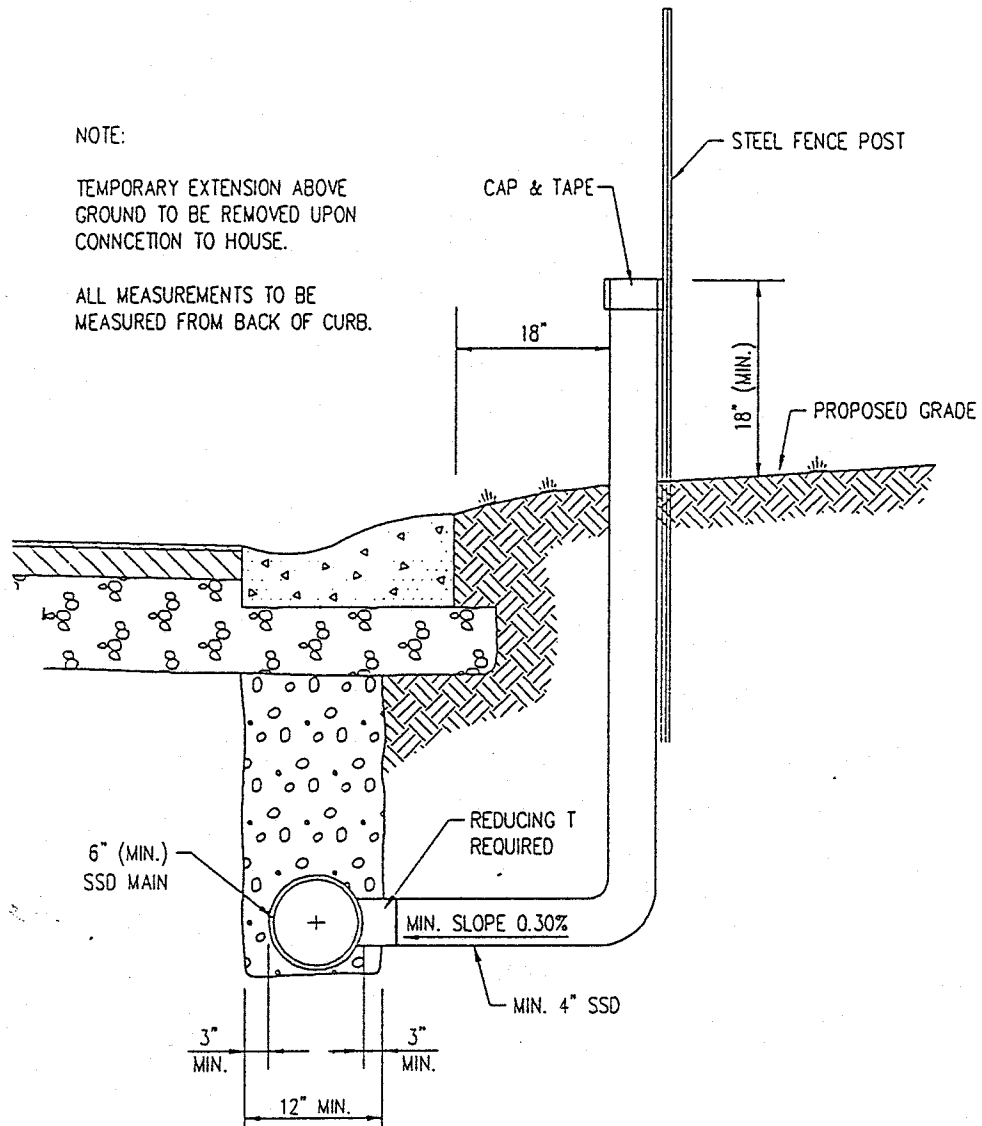
SSD LATERAL TO INDIVIDUAL LOTS IN REAR YARD

4-5-93

NOTE:

TEMPORARY EXTENSION ABOVE  
GROUND TO BE REMOVED UPON  
CONNECTION TO HOUSE.

ALL MEASUREMENTS TO BE  
MEASURED FROM BACK OF CURB.



TYPICAL SSD LATERAL TO INDIVIDUAL LOTS ALONG STREETS

NO SCALE

HAMILTON COUNTY SURVEYORS OFFICE

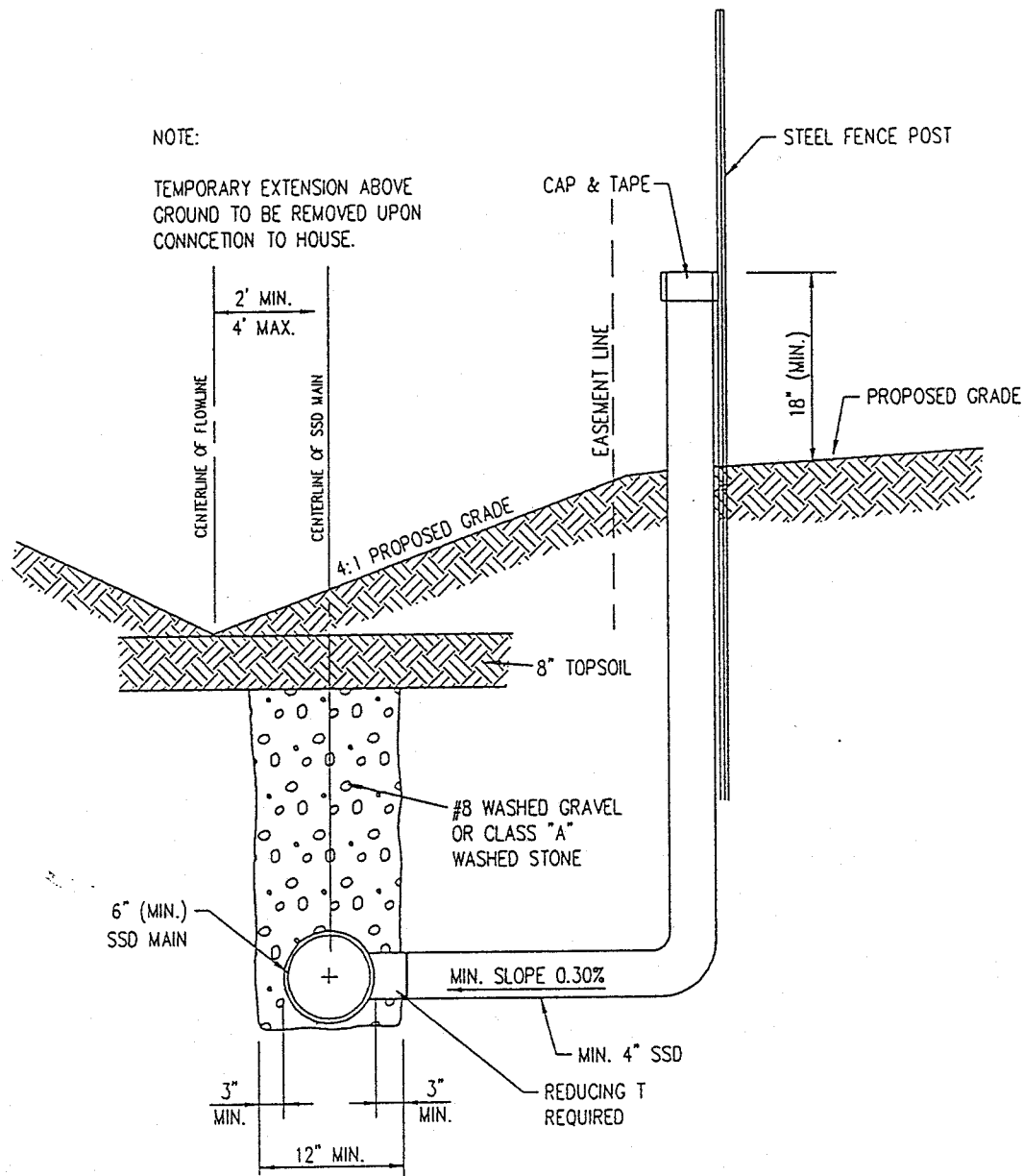
APPROVED:

*Hamilton C. Wolf*  
HAMILTON COUNTY SURVEYOR

4-5-93  
DATE

REVISED: \_\_\_\_\_

STANDARD PLAN



TYPICAL SSD LATERAL TO INDIVIDUAL LOTS IN REAR YARD

NO SCALE

HAMILTON COUNTY SURVEYORS OFFICE

APPROVED:

*Hamilton C. Wray*  
HAMILTON COUNTY SURVEYOR

4-5-93  
DATE

REVISED: \_\_\_\_\_

STANDARD PLAN